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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/015,369	12/12/2001	Satoshi Maruyama	FUJH 19.249	2797

26304 7590 04/05/2006

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EXAMINER

TAYLOR, BARRY W

ART UNIT

PAPER NUMBER

2617

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/015,369

Applicant(s)

MARUYAMA ET AL.

Examiner

Barry W. Taylor

Art Unit

2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

### **DETAILED ACTION**

The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 2617.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claim 9 recites the limitations "the up-converter", the digital pre-distorter" in lines two and four. There is insufficient antecedent basis for this limitation in the claim.

#### ***Drawings***

2. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants admitted prior art in view of Ekman et al (6,288,606 hereinafter Ekman).

Regarding claim 1. Applicants admit that prior art teaches a parallel operation system of transmission amplifiers (see Applicants figure 2), comprising:

first and second TX amplifiers ... (see 10-1 and 10-2 figure 2); and

a coupling unit ... (see 5 figure 2);

the first and second TX amplifiers (10-1 and 10-2 figure 2) each including:

a main amplifier (see 10-1 and 10-2 figure 2); and

a modulation unit ... (see 3-1 and 3-2 figure 2).

Applicants contend that prior art figure 2 fail to show using a switch to selectively connect (i.e. fed in common) modulation unit (3-1 or 3-2 figure 2) to amplifier (10-1 or 10-2).

Ekman also teaches a parallel operation (title, abstract) wherein switch (figures 1, 3, 4, col. 3 lines 5-32, col. 5 lines 3-65, col. 6 line 16 – col. 7 line 20) used to select an amplifier branch to be used thereby saving on the operation time of battery (col. 1 line 48 – col. 2 line 6).

It would have been obvious for any one of ordinary skill in the art at the time of invention to utilize the teachings of Ekman into the teachings of Applicants admitted prior art in order to extend the operating time of the battery as taught by Ekman.

Regarding claim 2. Ekman teaches using a switch to selectively select which one of the two parallel branches to connect (see figure 1 wherein switch 102 and 103 used, see switch 301 and 302 in figure 3, see switch 401, 402, 403, 407 figure 4).

Regarding claim 3. Applicants admit that prior art teaches a parallel operation system (figure 2) comprising:

- first and second TX amplifiers ... (see 10-1 and 10-2 figure 2); and
- a coupling unit ... (see 5 figure 2);
- the first and second TX amplifiers (10-1 and 10-2 figure 2) each including:
  - a main amplifier (10-1 and 10-2 figure 2);
  - a digital predistorter ... (see DPD in figure 2);
  - a quadrature modulator ... (see QMOD in figure 2);
  - an upconverter ... (see UCONV in figure 2).

Applicants contend that prior art figure 2 fail to show using a switch to selectively connect (i.e. fed in common) upconverter (UCONV figure 2) to amplifiers (10-1 or 10-2).

Ekman also teaches a parallel operation (title, abstract) wherein switch (figures 1, 3, 4, col. 3 lines 5-32, col. 5 lines 3-65, col. 6 line 16 – col. 7 line 20) used to select an amplifier branch to be used thereby saving on the operation time of battery (col. 1 line 48 – col. 2 line 6).

It would have been obvious for any one of ordinary skill in the art at the time of invention to utilize the teachings of Ekman into the teachings of Applicants admitted prior art in order to extend the operating time of the battery as taught by Ekman.

Regarding claim 4. Applicants further admit that prior art (figure 2) teaches the first and second transmission amplifiers each have a down-converter (see DCONV in figure 2), the output of the coupling unit (5 figure 2) being feedback via the down-converter (see DCONV in figure 2) to the digital pre-distorters (see DPD figure 2) included in the above first and second transmission amplifiers.

Regarding claim 5. Ekman teaches using a switch to selectively select which one of the two parallel branches to connect (see figure 1 wherein switch 102 and 103 used, see switch 301 and 302 in figure 3, see switch 401, 402, 403, 407 figure 4).

Regarding claim 6. Ekman teaches only supplying power to one of the two parallel paths (col. 1 line 54 – col. 2 line 6, col. 3 lines 10-16).

Regarding claim 7. Ekman teaches an external connector (i.e. switch) used to selectively select which one of the two parallel branches to connect (see figure 1 wherein switch 102 and 103 used, see switch 301 and 302 in figure 3, see switch 401, 402, 403, 407 figure 4).

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants admitted prior art in view of Ekman et al (6,288,606 hereinafter Ekman) and Tauchi (6,498,925).

Regarding claim 8. Applicants admitted prior art in view of Ekman fail to show attenuator being used.

However, Tauchi patent cites Ekman and uses an attenuator (item 1 figure 1, item 1 and item 20 in figure 3, item 1 figure 4 item 1 figure 6) to control the transmit power (title, abstract, col. 1 lines 44-55, col. 2 lines 9-16, col. 3 lines 6-65, col. 5 lines 24-66, col. 6 lines 26-64, col. 7 line 8 – col. 8 line 14).

It would have been obvious for any one of ordinary skill in the art at the time of invention to utilize the teachings of Tauchi into the teachings of Applicants admitted prior art (figure 2) in view of Ekman in order to dynamically control the transmit power of the mobile unit thereby further saving on battery life.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants admitted prior art in view of Tauchi (6,498,925).

Regarding claim 9. Applicants admit that prior art already teaches the parallel operation system of a transmission amplifier (see figure 2), comprising, on the output side of the upconverter (see UCONV figure 2).

Applicants figure 2 fails to show an attenuator being used.

Tauchi teaches an attenuator (item 1 figure 1, item 1 and item 20 in figure 3, item 1 figure 4 item 1 figure 6) being used to control the transmit power (title, abstract, col. 1

lines 44-55, col. 2 lines 9-16, col. 3 lines 6-65, col. 5 lines 24-66, col. 6 lines 26-64, col. 7 line 8 – col. 8 line 14).

It would have been obvious for any one of ordinary skill in the art at the time of invention to utilize the teachings of Tauchi into the teachings of Applicants admitted prior art (figure 2) in order to dynamically control the transmit power of the mobile unit thereby further saving on battery life.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants admitted prior art in view of Ratto (6,798,844).

Regarding claim 1. Applicants admit that prior art teaches a parallel operation system of transmission amplifiers (see Applicants figure 2), comprising:

first and second TX amplifiers ... (see 10-1 and 10-2 figure 2); and  
a coupling unit ... (see 5 figure 2).

Applicants contend that prior art figure 2 fail to show using a digital signal as feedback.

Ratto teaches using A/D and D/A converts to determine phase and amplitude imbalances caused by modulator and feeding back digital signals to correct the phase and amplitude (title, abstract, figure 1, col. 2 line 65 – col. 4 line 51).

It would have been obvious for any one of ordinary skill in the art at the time of invention to utilize the teachings of Ratto into the teachings of Applicants admitted prior art in order to determine parameters of the predistorter "digitally" thereby eliminating distortions that would normally be caused if analog signals were used as disclosed by Ratto (see col. 4 lines 49-51, col. 2 lines 65 – col. 3 line 12).



7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants admitted prior art in view of Marz (5,038,404).

Regarding claim 11. Applicants already admit that prior art teaches a parallel operating system of transmission amplifiers (figure 2), comprising;

first and second TX amplifiers ... (see 10-1 and 10-2 figure 2); and

a feedback system (see feedback arrows labeled DCONV in Applicants figure 2).

Applicants contend that prior art figure 2 fail to show using a common reference signal to feed both up and down converters.

Marz teaches a master reference is used for up converters thereby eliminating phase noise (title, abstract, col. 1 line 57 – col. 3 line 10) because frequency locking is assured.

It would have been obvious for any one of ordinary skill in the art at the time of the invention to utilize the teachings of Marz into the teachings of Applicants admitted prior art in order to eliminate phase noise.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barry W. Taylor, telephone number (571) 272-7509, who is available Monday-Friday, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost, can be reached at (571) 272-7872. The central facsimile phone number for this group is **571-273-8300**.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 2600 receptionist whose telephone number is (571) 272-2600, the 2600 Customer Service telephone number is (571) 272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For

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more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**Centralized Delivery Policy:** For patent related correspondence, hand carry deliveries must be made to the Customer Service Window (now located at the Randolph Building, 401 Dulany Street, Alexandria, VA 22314), and facsimile transmissions must be sent to the central fax number (571-273-8300).

Barry W. Taylor  
Art Unit 2617

  
BARRY TAYLOR  
PRIMARY EXAMINER